

Early Results from AIRS and Risk Reduction Benefits for other Advanced Infrared Sounders

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The recently-launched Atmospheric InfraRed Sounder (AIRS) on the NASA polar-orbiting AQUA satellite is the first in a series of new high-spectral-resolution infrared sounders. AIRS will be followed by two other polar-orbiting instruments - the Cross-track InfraRed Sounder (CrIS) on NPP (2006) and NPOESS (2009) and the Infrared Atmospheric Sounding Interferometer (IASI) on METOP (2006), and, in geostationary orbit, the GOES-R Hyperspectral Environmental Sounder (HES). All of these instruments have similar spectral coverage and, with the exception of IASI, have similar spectral resolution. AIRS is an excellent risk-reduction opportunity for the development and testing of new science that is now possible because of high spectral resolution. For example, the retrieval of accurate wavelength-dependent surface emissivity will allow more data over land to be assimilated into the forecast models. The use of high spatial resolution imager data (i.e. MODIS) together with high spectral resolution infrared sounder data will greatly improve cloud detection and cloud correction of radiances. AIRS data also represent an excellent opportunity to study processing requirements. One issue that is common to all high-spectral-resolution sounders is the enormous data volume. AIRS will provide a wealth of data to test compression techniques. In the area of data utilization, AIRS will be the first advanced infrared sounder to be used operationally by NWP centers. AIRS data are already being provided to NWP centers throughout the world, notably NCEP, the Goddard DAO, the United Kingdom's Meteorological Office and the ECMWF. The data are expected to provide answers to many questions on how best to utilize high-spectral-resolution infrared data in the forecast model.

Early results from AIRS, risk reduction benefits, and an overview of AIRS processing and distribution will be presented